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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/762,763	01/23/2004	Joseph G. Vockley	SAIC0086	3114
75131 7590 10/13/2009 KING & SPALDING LLP (SAIC CUSTOMER NUMBER) ATTN: DAWN-MARIE BEY 1700 PENNSYLVANIA AVE, NW SUITE 200 WASHINGTON, DC 20006				
EXAMINER RIGGS II, LARRY D				
ART UNIT		PAPER NUMBER		
1631				
MAIL DATE		DELIVERY MODE		
10/13/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/762,763

**Applicant(s)**

VOCKLEY ET AL.

**Examiner**

LARRY D. RIGGS II

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 July 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 12-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 23 July 2009 has been entered.

### ***Status of Claims***

Claims 1-11 and 15 are cancelled. Claims 12-14 are currently pending and under consideration.

### ***Withdrawn Rejections/Objections***

The rejection of claims 12 and 15 under 35 U.S.C. §101, in the Office action mailed 28 April 2009 is withdrawn in view of the amendments filed 29 June 2009.

The rejection of claims 12-15 under 35 U.S.C. §103(a) over Lai et al. in view of Benson et al., in the Office action mailed 28 April 2009 is withdrawn in view of the amendments filed 29 June 2009.

Rejections and/or objections not reiterated from previous office actions are hereby withdrawn. The following rejections and/or objections are either reiterated

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or newly applied. They constitute the complete set presently being applied to the instant application.

***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 13 and 14 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claim 13 recites "a computer-implemented system" comprising "a computer program embodied on a computer-readable physical medium, the computer program comprising a genomic data interface module, a formatting module, a search interface module, a search results parsing module and a removal module", lines 1-6.

The specification on pages 3-4 discloses "modules" however there is no specific hardware associated with the above "modules". Thus at least one embodiment of the invention may be implemented by software. Thus, the "module" perform particular functions, recited in claim 13 encompass software (a program) only. Programs, per se, are not patent eligible subject matter, therefore claim 13 is rejected for this reason.

Claim 14 is drawn to a "computer program, comprising computer readable medium having a computer readable program code embodied therein" in lines 1-2.

The instant specification does not explicitly define the scope of the limitation of "computer program and computer readable medium," but provides embodiments, (page 16, paragraph 60). The computer program product/computer readable media is not limited to a physical embodiment and may read on carrier waves and other nonstatutory media. See, e.g., In re Nuijten, Docket no. 2006-1371 (Fed. Cir. Sept. 20, 2007)(slip. op. at 18)("A transitory, propagating signal like Nuijten's is not a process, machine, manufacture, or composition of matter.' ... Thus, such a signal cannot be patentable subject matter."). Carrier waves and signals, are not patent eligible subject matter, therefore claim 14 is rejected for this reason.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lai et al. (Biochimica et Biophysica acta, 2001, 1517, 449-454) in view of Benson et al. (Nucleic Acids Research, 1993, 21(13), 2963-2965) and further in view of Neuwald et al. (Nucleic Acids Research, 1997, 25(9), 1665-1677).

The instant claims are drawn to a method performed on a suitably programmed computer, comprising: obtaining genomic data from a first set (or second set, claim 14) of organisms, formatting by a computer program, the genomic data into query-length sequences, searching, by a similarity search engine program, a genomic database using the query-length sequences, wherein

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the database contains genomic data from a plurality of organisms, parsing the results of the search for sequences having homology above a threshold other than the first set (second set, claim 14), identifying non-unique sequences and re-evaluating a subset of those results for unique sequences removing the non-unique sequences from the selected genomic database, and outputting to a user an identity of those unique sequences.

Regarding claim 12, Lai et al. disclose a method for obtaining EST sequences from humans (page 449, 2nd column, lines 2-4). They format these sequences to be used by a BLAST search engine (page 449, 2nd column, lines 5-6). They search a database of human sequences from the human gene index, HGI (page 449, 2nd column, first paragraph) and they search the GeneBank database, (page 451, left column, second paragraph), and parse the results (page 449, 2nd column, lines 12-13) to identify Drosophila genes having homology above a given threshold (page 449, 2nd column). Lai et al. shows BLAST reports the provide thresholds controlled by the user regarding identity, similarity (homology), score, (it is known in the art that BLAST reports show scores), expected (E) value and length of sequence under consideration, (page 449, right column; page 452, right column-page 454, left column, first paragraph; Figure 2). Lai et al. shows alignment of human TPR motif and consensus sequence of Drosophila TPR motif to a user, (Figure 2).

Lai et al. does not show that the genomic database contains genomic data from a plurality of organisms or re-evaluating non-unique sequences resulting

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from the search and removing sequences that are non-unique from the selected genomic database.

Benson et al. shows the GenBank database that contains, as of April 1993, 129 million bases, distributed in 14 different divisions, such as bacterial, viral, mammalian, primate, etc., (see page 2964, right column, last paragraph – page 2965, left column, first paragraph).

Lai et al. and Benson et al. do not show re-evaluating non-unique sequences resulting from the search and removing sequences that are non-unique from the selected genomic database.

Neuwald et al. shows a fully automated program called Probe to locate and align sequences, (abstract). Neuwald shows removing sequences lacking a trace of similarity to starting sequence, finding homologous sequences above a threshold (score 150) (unique sequences), outputting the homologous sequences to a user, re-evaluating the dataset without the unique sequences for new sequences (unique sequences), (page 1666, left column, fourth paragraph – page 1668, right column, first paragraph; Figures 1-3).

Regarding claim 14, Lai et al. shows comparison of human crooked protein and Drosophila crooked neck protein (first set), and human crooked neck protein and yeast clf1 protein (second set), with their subsequent identities and similarities, (page 452, right column, line 58 – page 454, line 2).

It would have been obvious to one of ordinary skill in the art at the time of the instant invention to modify the method of identifying analogous genes by comparative gene identification by Lai et al by providing the information regarding



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the plurality of organisms within GenBank by Benson et al. and a program that identifies homologous sequences, removes said sequences and re-evaluates the database for further homologous sequences by Neuwald et al. because Lai et al. shows the importance of obtaining differing data multiple sequence sources because there are several proteins with similar TPR structures (crooked neck protein) from several different organisms, (page 452, right column) and identifying related species, (page 449, left column) and a person of ordinary skill in the art would understand that obtaining sequence data from multiple organisms as shown in Benson et al. would result in a broad spectrum of data to better identify novel human sequences. Likewise, a person of ordinary skill in the art would understand that Neuwald enables identification of related sequences, (page 1666, left column, second paragraph). Therefore, one of ordinary skill in the art would recognize the claimed process as a combination of routine applications that are well known the art that and produce no more than expected results.

Claims 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lai et al. (Biochimica et Biophysica acta, 2001, 1517, 449-454) in view of Benson et al., (Nucleic Acids Research, 1993, 21(13), 2963-2965) and further in view of Neuwald et al. (Nucleic Acids Research, 1997, 25(9), 1665-1677) as applied to claims 12 and 14 above.

Claim 13 is drawn to a computer-implemented system comprising: a computer program embodied on a computer-readable physical medium, the

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computer program comprising a genomic data interface module, a formatting module, a search interface module, a search results parsing module, and a removal module; the genomic data interface module couples to a source of genomic data to receive genomic data characteristic of a set of organisms under investigation; the formatting module formats received genomic data into at least one query-length sequence, each query-length sequence being of a format compatible with a similarity search engine; the search interface module interfaces with the similarity search engine to submit the query-length sequence to a selected genomic database containing genomic data from a substantial plurality of organisms; the search results parsing module parses the results of the search of those sequences having homology above a threshold with at least one set of organism, and unique other than the set under investigation, and outputs to a user an identity of those unique sequences having homology above a threshold with at least one set of organisms other than the set under investigation, and the removal module removes the sequences from the selected genomic database that are not unique, wherein a subset of the non-unique sequences are re-evaluated by the search interface module.

In *In re Verner*, 262 F.2d 91, 95, 120 USPQ 193, 194 (CCPA 1958), the court held that broadly providing an automatic or mechanical means to replace a manual activity which accomplish the same result is not sufficient to distinguish over the prior art (see also *Manual of Patent Examining Procedure*, U.S. Trademark and Patent Office, section 2144.04, III).

In the instant case, the claimed invention makes the method of Lai et al., Benson et al. and Neuwald et al. into a computer-implemented system and indeed accomplishes the same result. Lai et al. shows a computer program product for carrying out their method, (page 449, right column, lines 9-13). Neuwald et al. shows a fully automated program called Probe, (page 1666, left column). It is thus does not sufficiently distinguish over Lai et al., Benson et al. and Neuwald et al. Therefore, the claimed invention, the computer-implemented system comprising instructions to execute a process would have been obvious to a person of ordinary skill in the art at the time the invention was made over the process disclosed by Lai et al., Benson et al. and Neuwald et al.

One of ordinary skill in the art would have been motivated to make it completely automatic by comprising instructions in the computer readable medium implemented into a system for executing all steps of the method to take the obvious advantage of a fully automatic process, i.e. saving time and cost. There would have been a reasonable expectation of success because the court held regarding software that "writing code for such software is within the skill of the art, not requiring undue experimentation, once its functions have been disclosed." *Fonar Corp.*, 107 F.3d at 1549, 41 USPQ2d at 1805. Such amounts to a familiar combination of well known prior art procedures for computer implementation of a process that produces no new or unexpected results beyond that which is well known, taught, and applied in the prior art.

***Response to Arguments***

Applicant's arguments filed 29 June 2009 have been fully considered but they are not persuasive.

Applicants' argue that the Lai et al. in view of Benson et al. does not teach or suggest each and every element of the instant claims.

Applicants' arguments are not persuasive.

All limitations of the instant claims are met by the cited art. See above.

***Conclusion***

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LARRY D. RIGGS II whose telephone number is (571)270-3062. The examiner can normally be reached on Monday-Thursday, 7:30AM-5:00PM, ALT. Friday, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marjorie Moran can be reached on 571-272-0720. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ERIC S. DEJONG/  
Primary Examiner, Art Unit 1631

/LDR/  
Larry Riggs  
Examiner, Art Unit 1631